

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

CINARA DESCRIPTIONS. (APHIDAE)
By F. C. HOTTES

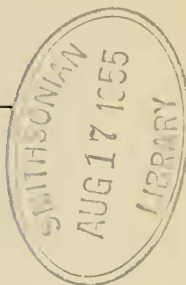
The Aphids described herewith were collected in 1954.

Cinara chinookiana n. sp.

Apterous viviparous female.

Size and color.—Length from vertex to end of anal plate varying from 3.29-3.50 mm. Color in life not recorded, specimens in alcohol with head and thorax dark brown. Legs dark brown with ends of tibiae and tarsi black or blackish-brown. Abdomen rather pale except for brownish-black cornicles, four rows of wax pore plates and large black shaped pigmented spots anterior to the cauda, which are dark brown. Mounted specimens show the first two segments of the antennae concolorous with the head, segments three, four and five have the apical portions of the segments darker, the sixth segment is dark and uniform in color. The thorax has six large dark brownish black shaped areas on the dorsum, these are arranged in two rows, and it is them that gives the dark color to the thorax.

Head and thorax.—Antennal segments with the following lengths: III .34-.347 mm., IV .143-.157 mm., V .185-.214 mm., VI .143-.171 + .028-.042 mm. Secondary sensoria arranged as follows: III with neither primary or secondary sensoria, IV with primary present, secondary sensoria as a rule absent but one may be present, V primary present, secondary one or two, as a rule one. Primary sensoria on segments five and six large, and apparently with rim poorly developed. Primary sensorium on four not differentiated from secondary except by position. Antennal hair not numerous, that on the third segment consisting of a long upstanding type which is rather coarse, and a shorter, finer type which is more inclined. Hair on first antennal segment very sparse, limited to area near apex of segment. Hairs at extreme base of third and fifth segments very short and extremely fine, this is not true of the hairs near the base of the fourth segment. Long hairs on sixth segment not extending beyond origin of marginal sensoria, hence roughly confined to basal half of segment. Rostrum almost reaching end of meta-thoracic coxae. Last three segments of the rostrum with the following lengths: .16, .157, .057 mm. Ocular tubercles poorly developed. Anterior margin of head arched, median suture present as a fine dark line, which does not reach posterior region of head. Mesosternal tubercle absent. Length of hind tibiae varying from 1.33-1.36 mm., hence rather short. Hair on inner and outer margins of hind tibiae unlike. That on inner margin, finer and shorter than that on outer and less upstanding, and with exceptions, shorter than width of segment, or subequal to width. Hair on this margin near apex of tibiae very numerous, much more inclined and only half as long as that, more basal. Hair on outer margin of tibiae of three types, a spine-like type, set at an angle of about



90 degrees, and about .145 mm. in length. These hairs are not numerous and are spaced from one another at a distance of about their length, or slightly less, the second type of hair is only about half as long as the first, much finer and is set at an angle of about forty-five degrees, the third type of hair is shorter than the second and more inclined; it is not numerous. Hind tarsal segments with the following lengths: .085, .27-.30 mm. The first tarsal segment is somewhat recessed within the end of the tibia, its ventral surface has about nine hairs on its apical two thirds. Hairs on dorsal surface of second tarsal segment much longer, more spine-like, and fewer than those on ventral surface.

Abdomen.—Dorsum of abdomen with numerous dark hairs, these are of two types. A long coarse type, which is dark in color and about .143 mm. in length, and a type only half as long, which is finer in texture and less dark. Both types arise from small pigmented spots. Cornicles with base varying from .37-.45 mm. the outer margin is very irregular. Cornicles with two types of hair, a coarse type restricted in number and confined to outer margin of cornicle for the most part, and a finer type confined more or less to the restricted region of the cornicle, but intermixed with the coarser type. These hairs are numerous. Pigmented spots anterior to cauda large, block shaped, with very irregular margins. Hair on these spots not confined to rows, but scattered on apical half. Cauda and anal plate with two types of hairs which are numerous. Genital plate setulose with numerous long and short hair.

Holotype apterous viviparous female. Deposited in the United States National Museum. Host *Abies lasiocarpa*. Lake Tipsoo, near summit Chinook Pass, Washington. Carl Johansen.

This species does not key satisfactorily in Palmer's key to the genus *Cinara* in "Aphids of the Rocky Mountain Region" and is definitely not included in her book. It differs from *C. lasiocarpae* (G&P) in the absence of pigmented spots on the dorsum of the abdomen, the shorter hair on antennae and legs, the much shorter tibiae, and the larger more block shaped pigmented spots anterior to the cauda. From *C. alacra* H&E it differs in color of tibiae, hair on antennae and legs, and in sensoria.

Cinara puerca Hottes

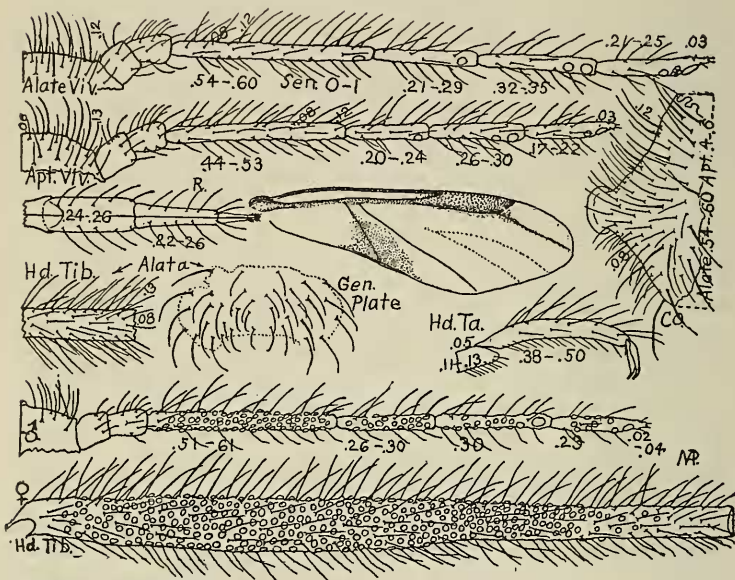
Alate viviparous female.

Length from vertex to end of anal plate 3.86 mm. Color similar to that of apterous viviparous female in all respects, and like that form free from all powder. Length of antennal segments as follows: III .57 mm., IV .16 mm., V .26 mm., VI .16 + .028. Sensoria distributed as follows: III, 13 arranged in a more or less straight row except for two smaller tuberculate sensoria. All sensoria with narrow rims. Presence of primary sensorium questioned, if present similar to secondary sensoria and counted as such. IV 1-2 no distinction made between primary and secondary sensoria. V one small secondary sensoria and large primary. Marginal sensoria on VI far removed from primary and arranged in a row, the primary sensorium on this segment is very tuberculate. Hair on first two antennal segments numerous. Hair on third segment numerous and upstanding, the longest hairs on this segment are shorter than the width of the segment. Hair on the fourth and fifth segments less numerous than on the third segment and less upstanding. Eyes as in

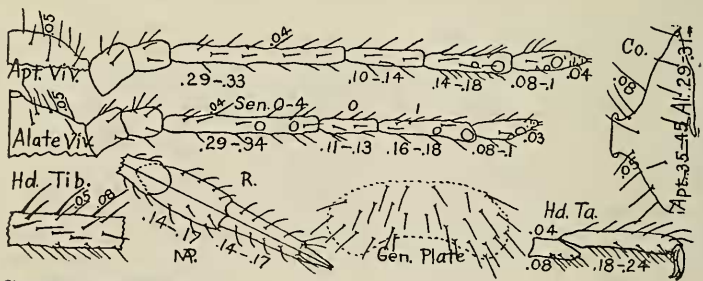
apterous viviparous female, ocular tubercles present but very small. Median suture of head rather narrow, with a short pigmented stripe on either side. Posterior half of head almost free from hair, the few present being no longer than the white area from which they arise, and very difficult to see. Anterior margin of head and anterior dorsum with a moderate number of normal hair. Lateral lobes of thorax with few hairs, these are largely confined to the central portion of the lobes, and are indicated by white areas around their base. Median posterior lobe of thorax, with hair indicated by white clear areas confined to ends of lobe, these hairs are few in number. Stigma dark smoky with a scale-like surface, provided with a few clear areas. End of stigma blunt. Radial sector short, heavy, slightly bent, bordered with smoky. Area of wing in region of end of radial sector rather narrow. Media very faint, once branched, the branch far removed from the margin of the wing. Anal and cubital veins very well developed, heavy, both strongly bordered with smoky, the anal vein ending in a small smoky area. Hind wing more or less smoky. Hind femora 1.43 mm. in length, slightly narrowed before slight bend near basal end. Hind tibiae 2.37 mm. in length. Hair on hind tibiae numerous and upstanding, fine, about as long as width of tibiae, but no longer. First tarsal segment about .11 mm. long, provided with about twenty hairs, but these are not all ventral. The second tarsal segment is .29 mm. in length, it has numerous fine hairs on all surfaces. Dorsum of abdomen with hairs similar to those of apterous viviparous female. Ventral surface of abdomen with numerous long hair. Cornicles with base measuring about .60 mm. Hair on cornicles confined largely to constricted area and surface immediately adjacent. There are a few hairs similar to those on the dorsum of the abdomen on the outer half of the base of the cornicles, they are indicated by clear areas at their base. Pigmented areas anterior to cauda block-like, provided with a row of long hairs on their posterior margins. Hair on cauda confined to posterior half. Genital plate crescent shaped, with mid region free from hair.

Morphotype described from a single specimen, reared on branch of *Pinus edulis*, Grand Junction, Colorado, Dec. 29, 1954. Deposited in the United States National Museum. Specimens of this species were still active in nature Nov. 24, 1954, and still viviparous. I suspect they were still active Dec. 11th although I could not locate them, ants so indicated, their presence.

Despite efforts to induce the production of sexual forms, by subjecting specimens being reared to cold and prolonged darkness, without knowing that either of these factors induce the production of sexual forms, specimens were still viviparous March 7, 1955. I can now add some information regarding the life habits of this species. One large colony living near the origin of a branch was completely covered over by a shed made of clay-like material, constructed by ants. There were two small openings, only large enough for the coming and going of the ants, far too small to permit the escape of adult aphids. Within this shed there were many aphids, and much honey dew, in fact the honey dew was so abundant that some dead aphids were preserved in it. Another colony living in a fissure of trunk bark, was encased by a clay bottle-shaped structure made by ants, this also had two small openings.



CINARA nimbata H.



CINARA nitidula H.

Within this there was much honey dew, a few live aphids and some dead aphids preserved in the liquid.

Cinara cognita Hottes and Essig

Alate viviparous female.

Length from vertex to end of anal plate varying from 2.44-3.29 mm. Color in life not known. Length of antennal segments as follows: III .40 mm., IV .17 mm., V .20 mm., VI .12 + .04 mm. Secondary sensoria distributed as follows: III 2-3, primary sensorium present. IV 0-1, primary sensorium present. V 1, primary sensorium present. Longest hair on third antennal segment about as long as width of segment, fine, sparse, upstanding. Long hair on sixth antennal segment confined to region basal to marginal sensoria. Last three segments of the rostrum with the following lengths: .185, .16, .07 mm. Last three segments of the rostrum extending beyond the metathoracic coxae. Media twice branched, second branch closer to the first than to the margin of the wing. All veins lightly bordered with dusky. Hair on lateral lobes of thorax confined largely to the median region of the lobes, absent on more lateral portions. Median posterior lobe of thorax with very few hairs, these confined to central region. Hind femora 1.07 mm. in length. Hind tibiae 1.86 mm. long. Hind tarsal segments not in condition to measure. Outer margin of cornicle base very irregular, about .25-.31 mm. across. Hairs on cornicles confined largely to constricted area, opening of cornicles acentric within base, which may have one or two clear areas. Pigmented spots anterior to cauda widely separated, provided with a row of long hairs on the posterior margin. Hair on dorsum of abdomen exceedingly sparse, confined roughly to transverse rows which are far apart, the individual hairs being spaced from one another by a distance about equal to their length. Hair on ventral surface of abdomen normal. Hair on cauda confined to posterior margin, remainder of cauda faintly setulose. Genital plate with three to four hairs.

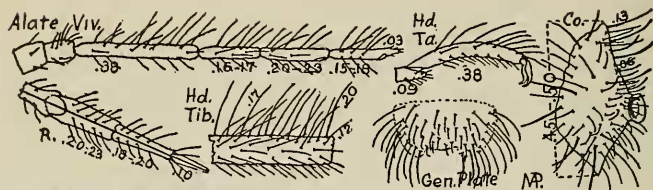
Morphotype alate viviparous female, collected on *Juniperus communis* Tundo State Park, Washington. June 23, 1954. The material was sent in by Prof. Carl Johanson, of Pullman, Washington.

Cinara lasiocarpae (Gillette and Palmer)

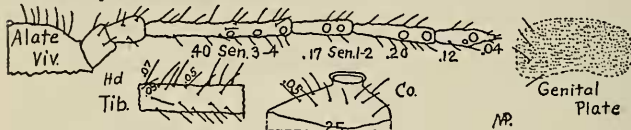
Alate male.

Length from vertex to end of anal plate 2.71 mm. Head dusky black. Thorax dusky brown. Abdomen dusky green with no spots. Cornicles black. Antennae dusky. Femora yellowish at base remainder of femora dusky. Tibiae dusky, with region near base more or less yellowish.

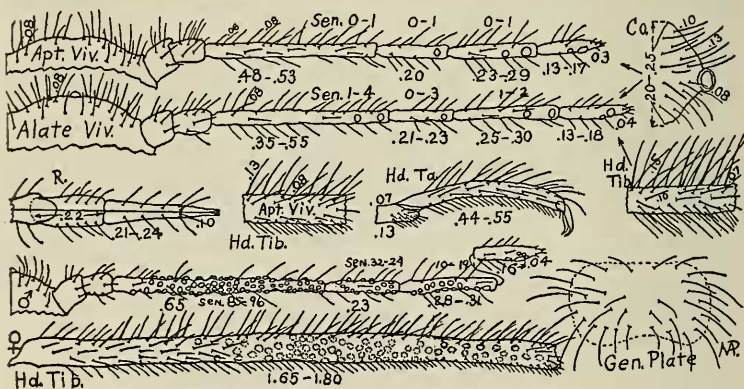
Head and thorax.—Length of antennal segments as follows: III .53 mm., IV .29 mm., V .27 mm., VI .17 + .028 mm. Sensoria distributed as follows: III 48-51, primary sensorium present, like secondary. IV 17, primary sensorium present. V 15, primary present. VI 1. All secondary sensoria small, irregularly arranged and very tuberculate. Hair on antennae about .1 mm. in length, fine, set at an angle of about 45 degrees on third segment, and slightly more on fourth and fifth segments. Rostrum with segments three, four, and five extending beyond metathoracic coxae. Length of last three segments of the rostrum as follows: .24, .185, .085 mm. Media with two forks, second fork closer to



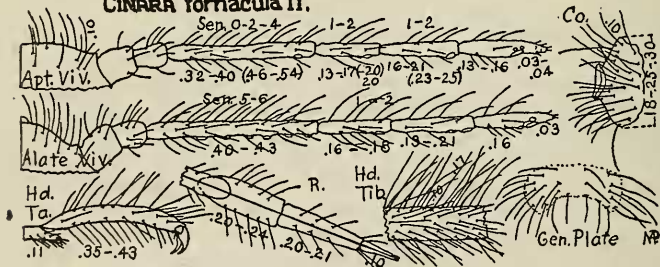
CINARA engelmanniensis (G&P)



CINARA cognita H&E.



CINARA fornacula H.



CINARA pilicornis (H).

margin of wing than to first fork. Radial sector and anal vein bordered. Hind tibiae 2.06 mm. in length. Hair on outer margins of hind tibiae .185 mm. in length. Hair on inner margin of hind tibiae much shorter, and less upstanding. First segment of hind tarsis .1 mm. in length, length of second segment of hind tarsis .347 mm. Ventral surface of first tarsal segment with about 15 hairs.

Abdomen.—Cornicle with base measuring about .24 mm. Harpagons blunt free. Dorsal and ventral surfaces of abdomen with numerous hairs.

Allotype alate male. Reared on branch of *Abies lasiocarpa* Sept. 18, 1954. Deposited in the Collection of the United States National Museum. The specimen described herewith was one of two immature males taken with oviparous females south of Glade Park, Colorado, Sept. 12, 1954. Apparently my rearing methods did not quite satisfy the other male specimen, he wandered off, just as he should have become an adult. Had I not taken the male described here as an immature specimen, associated with females, I would hardly associate him with *C. lasiocarpae*. This is the last form of this species to be described.

Cinara hottesi (Gillette and Palmer)

Apterous male.

Length from vertex to end of anal plate varying from 1.93-2.35 mm. Head, thorax and abdomen bluish-black without pulverulence. First and second antennal segments blackish, remaining antennal segments dusky yellow with apical portions dusky. Femora yellowish except for extreme apex which is brownish. Tibiae yellowish becoming light dusky near middle, the dusky growing darker towards the apex. Tarsi dusky. Cornicles black. Dorsum of abdomen with four rows of small wax pore plates.

Head and thorax.—Median suture of head very narrow, not much if any darker than head. Length of antennal segments as follows: III .33-.35 mm., IV .16-.185 mm., V .21-.23 mm., .10-.13 + .42-.057 mm. Secondary sensoria conspicuously few for a male Aphid. Third antennal segment with neither secondary or primary sensoria. Fourth antennal segment with from zero to four secondary sensoria, as a rule none or one. Primary sensorium present on fourth. Fifth antennal segment with from one to three secondary sensoria, as a rule only one, primary sensorium present. Hair on antennal segments, sparse, upstanding about .085 mm. in length. Rostrum longer than the body, the third, fourth and fifth segments extending beyond the abdomen. Last three segments of the rostrum with the following lengths: .26, .18, .085 mm. Hind tibiae varying from 1.43-1.50 mm. in length. Hind tarsal segments with the following lengths: .071-.085 mm., .228-.26 mm. Hair on outer margin of hind tibiae much longer than that on inner margin, also more spine-like, about .1 mm. in length and rather upstanding, forming an angle of about sixty degrees, or more. First tarsal segment with about nine hairs on apical ventral half of segment.

Abdomen.—Cornicles about .286 mm. across. Harpagons black, united for almost all of their length.

Oviparous female.

Length varying from 2.71-2.84 mm. Color as in apterous viviparous female. Entire body free from all traces of pulverulence. Length of

antennal segments as follows: III .43-.46 mm., IV .185-.228 mm., V .21-.24 mm., VI .11-.14 + .057 mm. Secondary sensoria distributed as follows: III with neither primary or secondary sensoria, IV as a rule with neither primary or secondary sensoria, but primary sensorium may be present. V with primary sensorium, as a rule without secondary sensoria, but one may be present. Rostrum as long as or longer than body. Thorax and abdomen.—Legs less yellow than in viviparous females, more like those of male. Hind tibiae varying from 1.73-1.93 mm. Hind tibiae most unusual, as a rule without sensoria rarely with one, never with more than three.

Allotype apterous male, taken Oct. 5, 1954 on *Picea engelmannii*, Glade Park, Colorado. Morphotype Oviparous female, taken Sept. 21, 1954 on *Picea engelmannii*, Glade Park, Colorado. Both types deposited in the collection of the United States National Museum.

This must be a rare species. I collected the original material in 1923, this is the second time I have taken it, after years of searching. No one that has seen living specimens of this species will ever take it for anything else. *Picea engelmannii* is fairly common on the Fruita Reserve and southward on the Pinon Mesa, south of Glade Park, Colorado. Strangely enough, I found it on only one limb of a tree, despite the fact that I looked for it on hundreds of trees. On this limb, which was about three feet from the ground, and about two inches in diameter, the specimens were very abundant throughout the season. The colony encrusted on the bark of the limb almost solidly for as long as I could reach. The males in nature greatly resemble immature females, and are therefore very difficult to differentiate from them. I solved this problem by taking large numbers of females, and sorting the males from them under a microscope, even then I took only four males, in three trips after them. The oviparous females were very abundant, and developed through a long period of time starting in mid-September.

Cinara pilicornis (Hartig)

Prof. Palmer has kindly sent me for study several metatype slides of *C. piceicola* (Cholodkovsky). The material sent by Cholodkovsky was apparently sent in alcohol, and was mounted by L. C. Bragg. It is as I had suspected similar to *C. pilicornis* (H). The drawing of the sixth antennal segment of the apterous viviparous female is not correct as to hairs, in "Aphids of the Rocky Mountain Region." Prof. Palmer has further indicated to me that this drawing was not made from metatype material, as indicated on page 39 of her book. Dr. Pašek of Czechoslovakia, whose work in this group gave great promise, died last summer. He considered a much different species from *pilicornis* as *piceicola*. I suspect that the *piceicola* of Pašek is new, it differs greatly from *pilicornis* (H) and I would not expect Cholodkovsky to confuse the two, even if the material was not mounted. For the time being, we on this side of the Iron Curtain have no way of knowing just what species Cholodkovsky had, nor can we find out if his type material exists. His original description is inadequate, and hardly sufficient to distinguish *piceicola* from *hyalinus* Koeh = *pilicornis*. It should also be noted that Cholodkovsky distinguished *hyalinus* from *pinicola* Kaltenbach, both species of which are synonyms of *pilicornis*. It is however significant that

Cholodkovsky mentions the male of *piceicola* as apterous, the male of *pilicornis* is said to be alate. He also mentions the fact that the sexual forms appear at the end of June or early July, but these continue to be found till mid-September, when the sexuals of *pilicornis* appear. As has been indicated elsewhere *C. fornacula* Hottes is a closely allied form.

Cinara obscura Bradley.

Cinara enigma H&K New Synonymy.

Dr. Bradley did not describe the sixth antennal segment of *C. obscura*, which is the most distinctive feature of this species, the unguis being very short and thick. His figure of this segment is not correct, the unguis being shown too long and slender. Since calling this to the attention of Dr. Bradley, he has provided me with a drawing which leaves no doubt that *enigma* is a synonym of *obscura* which has priority by a few months.

